

***Interview Summary***

1. A proposed amendment was submitted for applicant's consideration. Examiner suggested Applicant to amend claims as shown in the Examiner's Amendment below in order to place the application in condition for allowance.

***Examiner's Amendment***

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

3. Authorization for this examiner's amendment was given in a telephone interview with the Applicant's Representative, Nidhi Chotani (Reg. No. 59,924) on 15 April 2008.

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Please replace all prior versions and listing of claims in the application with the following listing of claims:

**IN THE CLAIMS:**

1-2. **(Cancelled)**

3. **(Previously Presented)** The method of claim 4, further including:  
collecting dependency data from a plurality of networked resources including the first managed networked resource; and

storing the dependency data in a repository centralized within a distributed systems management environment, wherein the centralized repository is stored in the software manager of the distributed systems management environment separately from other configuration data associated with the plurality of networked resources.

4. **(Currently Amended)** A computer-based method for communicating dependency data specifying dependency relationships between networked resources, including:

monitoring a first managed networked resource via a software agent executing on the first managed networked resource, wherein the software agent is managed by a software manager executing remotely from the first managed networked resource;

collecting, by the software agent executing on the first managed networked resource, configuration data describing the first managed networked resource;

extracting, by the software agent executing on the first managed networked resource, dependency data from the configuration data, the dependency data specifying either provider or consumer dependency relationships between the first managed networked resource and one or more other managed networked resources, wherein said provider dependency relationship indicates that a first problem at the first managed networked resource will propagate to the one or more other managed networked resources, and said consumer dependency relationship indicates that a second problem at the one or more other managed networked resources will propagate to the first managed networked resource;

generating, at the first managed networked resource, a table that includes the extracted dependency data, wherein the table is stored separate from other configuration data associated with the first managed networked resource that has been collected by the software agent;

offering access to the extracted dependency data in the table generated at the first managed networked resource, the access being offered via a dependency interface of the software agent executing on the first managed networked resource, the dependency interface being an interface for a distributed systems management protocol; and

communicating the dependency data from the software agent to the software manager.

5. **(Original)** The method of claim 4, where the distributed systems management protocol is an open standard.
6. **(Original)** The method of claim 4, where the distributed systems management protocol is SNMP.
7. **(Previously Presented)** The method of claim 5, wherein offering access includes the software manager communicating across a network with the software agent using the distributed systems management protocol.

8. **(Previously Presented)** The method of claim 7, wherein the software agent communicates with the software manager using the distributed systems management protocol to raise a trap based on the dependency data included in the table.

9. **(Currently Amended)** A computer-based method for distributed systems management, including:

monitoring a first managed network device with a first software agent executing on the first managed network device, wherein the software agent is managed by a software manager executing remotely from the first managed network device;

collecting, by the software agent executing on the first network device, configuration data describing the first managed network device;

gathering, by the first software agent executing on the first managed network device, dependency data describing either a provider or a consumer dependency relationship between the first managed network device and one or more other network devices, wherein said provider dependency relationship indicates that a first problem at the first managed network device will propagate to the one or more other network devices, and said consumer dependency relationship indicates that a second problem at the one or more other network devices will propagate to the first managed network device;

communicating, by the first software agent executing on the first managed network device, the dependency data gathered by the first software agent to the software manager;

processing, by the software manager, the gathered dependency data obtained from the first software agent to determine whether a either the provider or a the consumer dependency relationship exists between the first managed network - device and a second network device; and

initiating, by the software manager, a second software agent if a either the provider or a the consumer dependency relationship exists between the first managed network device and the second network device, wherein the second software agent executes on and monitors the second network device.

**10-17. (Cancelled)**

18. **(Currently Amended)** A computer-based method for collecting dependency data specifying dependency relationships between networked resources, the method including:

monitoring a plurality of managed networked resources via a software agent executing on each of the managed networked resources, wherein the plurality of software agents are managed by a software manager executing remotely from the plurality of managed networked resources;

gathering, by the plurality of software agents executing on the plurality of managed networked resources, configuration data describing the plurality of networked resources;

extracting, by the plurality of software agents, dependency data from the gathered configuration data, the dependency data including data specifying either provider or consumer dependency relationships associated with the plurality of managed networked resources, wherein said provider dependency relationship indicates that a first problem at a first managed networked resource will propagate to a second networked resource, and said consumer dependency relationship indicates that a second problem at the second networked resource will propagate to the first managed networked resource;

communicating the dependency data extracted by the plurality of software agents from the plurality of software agents to the software manager;

adding at least a portion of the dependency data extracted by the plurality of software agents to a central repository managed by the software manager, wherein the portion of the dependency data added to the central repository is stored in the central repository separately from other configuration data;

processing, by the software manager, the extracted dependency data obtained from the plurality of software agents to determine whether a either the provider or a the consumer dependency relationships exist ~~relationship exists~~ between at least one of the plurality of managed networked resources and one or more additional networked resources not included in the plurality of managed networked resources; and

initiating, by the software manager, management of the one or more additional networked resources not included in the plurality of managed networked resources if a either the provider or a the consumer dependency relationships exist ~~relationship exists~~

between at least one of the plurality of managed networked resources and the one or more additional networked resources.

19-21. **(Cancelled)**

22. **(Previously Presented)** The method of claim 18, wherein the software manager offers a client application access to the central repository, the access offered using a distributed systems management protocol.

23. **(Original)** The method of claim 22, wherein the distributed systems management protocol is SNMP.

24-25. **(Cancelled)**

26. **(Previously Presented)** The article of claim 27, further including instructions causing the machine to:

collect dependency data from a plurality of networked resources including the first networked resource; and

store the dependency data in a repository centralized within the software manager of a distributed systems management environment, wherein the centralized repository is stored in the software manager of the distributed systems management

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environment separately from other configuration data associated with the plurality of networked resources.

27. **(Currently Amended)** An article comprising a machine-readable storage medium that stores executable instructions to communicate dependency data specifying dependency relationships between networked resources, the instructions causing a machine to:

monitor a first managed networked resource via a software agent executing on the first managed networked resource, wherein the software agent is managed by a software manager executing remotely from the first managed networked resource;

collect, by the software agent executing on the first managed networked resource, configuration data describing the first managed networked resource;

extract, by the software agent, dependency data from the configuration data, the dependency data specifying either provider or consumer dependency relationships between the first managed networked resource and the one or more other managed networked resources, wherein said provider dependency relationship indicates that a first problem at the first managed networked resource will propagate to the one or more other managed networked resources, and said consumer dependency relationship indicates that a second problem at the one or more other managed networked resources will propagate to the first managed networked resource;

generate, at the first managed networked resource, a table that includes the extracted dependency data, wherein the table is stored separate from other



configuration data associated with the first managed networked resource that has been collected by the software agent;

offer access to the extracted dependency data in the table generated at the first managed networked resource, the access being offered via a dependency interface of the software agent executing on the first managed networked resource, the dependency interface being an interface for a distributed systems management protocol; and

communicate the dependency data from the software agent to the software manager.

28. **(Currently Amended)** An article comprising a machine-readable storage medium that stores executable instructions to manage distributed systems, the instructions causing a machine to:

monitor a first managed network device with a first software agent executing on the first managed network device, wherein the software agent is managed by a software manager executing remotely from the first managed network device;

collect, by the software agent executing on the first managed network device, configuration data describing the first managed network device;

gather, by the first software agent, dependency data describing either a provider or a consumer dependency relationship between the first managed network device and one or more other network devices, wherein said provider dependency relationship indicates that a first problem at the first managed network device will propagate to the one or more network devices, and said consumer dependency relationship indicates

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that a second problem at the one or more network devices will propagate to the first managed network device;

communicate, by the first software agent executing on the first managed network device, the dependency data gathered by the first software agent to the software manager;

process, by the software manager, the gathered dependency data obtained from the first software agent to determine whether a either the provider or a the consumer dependency relationship exists between the first managed network device and a second network device; and

initiate, by the software manager, a second software agent if a either the provider or a the consumer dependency relationship exists between the first managed network device and a the second network device, wherein the second software agent executes on and monitors the second network device.

**29-31. (Cancelled)**

32. **(Previously Presented)** The method of claim 9, further comprising: adding the second software agent to an active agent list by the software manager, the active agent list maintained at the software manager; and classifying, by the software manager, the second network device as a second managed network device managed by the software manager.

33. **(Currently Amended)** The method of claim 9, further comprising:

determining, by the software manager, whether the second network device is a device that is managed by the software manager;

initiating, by the software manager, a second software agent on the second network device if a either the provider or a the consumer dependency relationship exists between the first managed network device and a second network device and if the second network device is a device that is not managed by the software manager.

34. **(Previously Presented)** The method of claim 33, wherein the determining whether the second network device is a device managed by the software manager comprises determining whether the second software agent executing on the second network device is included in an active agent list maintained by the software manager.

35. **(Currently Amended)** The method of claim 18, wherein initiating, by the software manager, management of the one or more additional networked resources further comprising:

initiating, by the software manager, one or more additional software agents at the one or more additional networked resources if a either the provider or a the consumer dependency relationships exist ~~relationships exists~~ between at least one of the plurality of managed networked resources and the one or more additional networked resources, wherein each of the one or more additional software agents execute on and monitor the corresponding one or more additional networked resources;

adding the one or more additional software agents to an active agent list by the software manager, the active agent list maintained at the software manager; and  
classifying, by the software manager, the one or more additional networked resources as one or more additional managed networked resources managed by the software manager.

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***Allowable Subject Matter***

4. Claims 3-9, 18, 22-23, 26-28, and 32-35 are allowed. The following is an examiner's statement of reasons for allowance: In interpreting the claims, in light of the specification and the authorized Examiner's Amendment on 15 April 2008, the Examiner finds the claimed invention to be patentably distinct from the prior art of record.
5. In regards to statutory subject matter, the Examiner interprets the claim language of "managed networked resources" to be hardware as recited in page 5, lines 9-11 of the specification, "Thus, an application or service hosted on a physical device, for instance encoded in a computer memory and executed by a processor, is a networked resource." See also page 6, lines 12-15 and figure 1B. The Examiner interprets the claim language of "an article comprising a machine-readable storage medium" to be hardware as well since a computer memory executed by a processor is a machine-readable storage medium. See above citations.
6. **Ramanathan et al. (6,286,047)** teaches a method for identifying services, service elements and dependencies among the services and service elements includes executing first and second phases of discovery. In the first phase, the services and

service elements are detected, as well as a first set of dependencies. The second phase is based on results of the first phase and is focused upon detecting inter-service dependencies, i.e., conditions in which proper operation of one service relies upon at least one other service. Various techniques may be used in executing the first phase, including accessing information in a domain name service (DNS) of the network to identify dependencies, as well as services and service elements. Discovery within the first phase may also be based upon recognizing naming conventions. Regarding the second phase, one approach to discovering inter-service dependencies is to deploy discovery agents implemented in computer software to access content of configuration files of applications detected in the first phase. Discovery agents may also be used to monitor connections completed via specified service elements detected in the first phase, such that other inter-service dependencies are identified. As an alternative or additional approach, network probes may be deployed to access information of data packets transmitted between service elements detected in the first phase, with the accessed packet information being used to detect inter-service dependencies. When information of the DNS is accessed in the first phase, the information is used as a basis for determining at least some of (1) groups of service elements that are generally equivalent with respect to executing a particular service within the network, (2) hosts supporting virtual hosting, (3) hosts supporting virtual servers, and (4) name servers (Ramanathan et al., abstract, figure 2, and corresponding text).

7. **Bishop et al. (6,983,317)** teaches a Managed Site (10), a logical network entity, is composed of a number of Sub Sites (20) in a one to many relationship. A Sub Site

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(20) is a logical component, which is composed of a number of Engines (30). Nodes (40) similarly relates to their Engine (30) in a many to one relationship. A Node (40) is a collection of Managed Elements (ME's) (50) (while being an ME (50) itself), which represent network state information. The subsite (20) consists of the engine (30) connected to server nodes (40). One or more clients (110) are connected to the management engine (30) and access management engine (30) information relating to managed elements (50) including nodes (40). The connected manager engines may communicate with one another so that, for example, in the event of a failure, one of the manager engines remaining on line commences monitoring of manage elements assigned to the failed manager engine. Upon accessing the manager engine (30), the client interface displays relationships among managed elements (50) using meaningful connectors and tree-like structures. In addition to basic managed element state monitoring functionality, the manager engine (30) provides a variety of automated tasks ensuring the health of the network and optimal failure correction in the event of a problem. For example, the manager engine (30) performs root cause analysis utilizing an algorithm tracing through manged element (50) relationships and indicating the source of the failure (**Bishop et al., abstract, figure 3, and corresponding text**).

8. However, the prior art of record fail to teach or suggest individually or in combination the claimed limitations, wherein said provider dependency relationship indicates that a first problem at the first managed networked resource will propagate to the one or more other managed networked resources, and said consumer dependency relationship indicates that a second problem at the one or more other managed

networked resources will propagate to the first managed networked resource, which correlate to page 4, lines 20-27 of the applicant's specification that states, "A dependency relationship exists between a first networked resource and a second networked resource if a problem in the first resource could cause a problem in the second. This is called the "propagation" of a problem from the second resource to the first. The second resource is said to depend on or "consume" the first. Thus, the relationship from the second resource to the first is a "consumer" dependency relationship, while the relationship from the first to the second is a "provider" dependency relationship. The property describing whether a dependency relationship is consumer or provider with regard to its resources is its "direction." See also page 18, line 29-page 19, line 3 and page 20, lines 8-25 for further explanation.

9. These limitations, in conjunction with the other limitations in the independent claims 4, 9, 18, 27, and 28 are not specifically disclosed or remotely suggested in the prior art of record. Therefore, claims 3-9, 18, 22-23, 26-28, and 32-35 are allowed.

10. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ranodhi Serrao whose telephone number is (571) 272-7967. The examiner can normally be reached on 8:00-4:30pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rupal Dharia can be reached on (571) 272-3880. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/R. N. S./

Examiner, Art Unit 2141

4/21/2008

/William C. Vaughn, Jr./

Supervisory Patent Examiner, Art Unit 2144